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ABSTRACT

The fourth and final report on this study of the impact of bilingual education provides an overview of the design of the study and a summary of the findings, which were discussed in more detail in three previously released volumes. The goals of the study were to: (1) determine both the cognitive and the affective impact of bilingual education on students in Spanish/English bilingual education projects funded through ESEA Title VII, (2) describe the educational processes operating in these projects, (3) identify those educational practices which result in greater gains in student achievement, and (4) determine per-student costs associated with each project. Projects selected for the study were Title VII Spanish/English bilingual projects in either their fourth or fifth year of funding, as of fall 1975. The following topics are discussed: data collection strategy; data analysis strategy; types of students served by Title VII projects in the Study; educational goals; costs associated with Title VII Bilingual Project Schools and Non-Title VII Schools for 1975-76; characteristics of teachers and teacher aides, the impact of Title VII Programs on student achievement and attitudes; the relationship between gains in student achievement and attitudes and classroom procedures and environment and teaching staff characteristics. A list of the participating projects and school districts is included. (AMH)

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EVALUATION OF THE IMPACT OF ESEA TITLE VII SPANISH/ENGLISH BILINGUAL EDUCATION PROGRAM

Overview of Study and Findings

Malcolm N. Danoff

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CONTENTS

		Page
	PREFACE	v
	ACKNOWLEDGMENTS	vii
I.	BACKGROUND AND RATIONALE	1
	A. Program vs. Project Evaluation	1
	B. Goals of the Study	1
	C. Projects Selected for the Study	1
II.	DATA COLLECTION STRATEGY	2
	A. Study Design	2
	B. Sample of Projects, Classrooms, and Students	3
	C. Instruments and Testing Schedule	3
III.	DATA ANALYSIS STRATEGY	6
	A. Analytic Approach and Methods	6
	B. Measures of Student Achievement and Attitudes Analyzed	6
IV.	SUMMARY OF FINDINGS	8
	A. Types of Students Served by Title VII Projects in the Study	8
	Ethnicity	8
	Age	8
	Sex	8
	Number of Years in a Bilingual Project	8
	Socioeconomic Status	8
	Language Skills	9
	Teacher Judgment Related to Student Assignment to Different Test Packages	9
	Student Assessment Related to Teacher Judgment	9

CONTENTS (continued)

	Page
Reason for Presence in a Title VII Classroom . .	10
English Reading Scores	10
B. Educational Goals of Title VII Projects in the Study	10
Project Director Interview Findings	10
Classroom Teacher Interview Findings	11
C. Costs Associated with the Title VII Bilingual Project Schools and Non-Title VII Schools for 1975-76	11
D. Characteristics of Teachers and Teacher Aides in Title VII Projects	12
Overall Qualifications	12
Training and Experience in Bilingual Education . .	12
Degree of Bilinguality	13
E. Impact of Title VII Program on Student Achievement and Attitudes	13
Results from Second- and Third-Grade Follow-On Sample Fall 1975 to Fall 1976 Analysis	13
Results from Second Through Sixth Grade Full Impact Study Sample Fall 1975 to Spring 1976 Analysis	14
English Language Arts and Mathematics	14
Student Attitudes	14
Spanish Reading	14
F. Relationship Between (1) Gains in Student Achievement and Attitudes and (2) Classroom Procedures, Classroom Environment, and Teaching Staff Characteristics . . .	15
Classroom Procedures	15
English Language Arts Educational Processes . .	15
Mathematics Educational Processes	18
Spanish Language Arts Educational Processes . .	18
Classroom Environment	18
Teaching Staff Characteristics	18
APPENDIX--Title VII Projects and School Districts Participating in the Impact Study	21

PREFACE

This report is the fourth and final document describing the Evaluation of the Impact of the ESEA Title VII Spanish/English Bilingual Program conducted by the American Institutes for Research for the U.S. Office of Education. Presented here is an overview of the design of the Study and a summary of the major findings which were discussed in more detail in the previously released three volumes.

Volume I described the Study's design and findings based on the fall 1975 to spring 1976 data. Volume II contained detailed site descriptions of the participating projects and districts. Volume III examined (1) the impact of the Title VII Program based on additional student outcome data collected after the publication of Volume I, and the results obtained from a more detailed examination of data reported in Volume I; and (2) the educational processes found in the Impact Study classrooms and their effects on student performance.

The Impact Study was one of three studies funded by the U.S. Office of Education under a contract with the American Institutes for Research to evaluate bilingual education. The following reports have been prepared under this contract.

> The Identification and Description of Exemplary Bilingual Education Programs (AIR Report 48300-8/75-FR I), August 1975 (ERIC Report ED 123-893) 187 pp.
>
> Study of Bilingual-Bicultural Projects Involving Native American, Indo-European, Asian and Pacific Language Groups (AIR Report 48300-8-75-FR II), September 1975 (ERIC Report ED 123-894) 130 pp.
>
> Evaluation of the Impact of ESEA Title VII Spanish/English Bilingual Education Program, Volume I: Study Design and Interim Findings (AIR Report 48300-2/77-FR III), February 1977 (ERIC Report ED 138-090) 449 pp.
>
> Evaluation of the Impact of ESEA Title VII Spanish/English Bilingual Education Program, Volume II: Project Descriptions (AIR Report 48300-2/77-FR IV), February 1977 (ERIC Report ED 138-091) 599 pp.
>
> Evaluation of the Impact of ESEA Title VII Spanish/English Bilingual Education Program, Volume III: Year Two Impact Data, Educational Process, and In-Depth Analyses (AIR Report 48300-1/78-FR V), January 1978, 405 pp.

Copies of all reports related to this project are available from the U.S. Office of Education, Office of Planning, Budgeting, and Evaluation, Room 3044, 400 Maryland Avenue S.W., Federal Office Building #6, Washington, D.C. 20202. All but Volume III and this document are currently available from the ERIC Document Reproduction Service, P. O. Box 190, Arlington, Virginia 22210. Volume III and this Overview of Study and Findings will also be available through the ERIC system in the near future.

Copies of the various questionnaires and other non-copyrighted data collection instruments used in the Impact Study are on file with the ERIC system. Publishers of the cognitive tests used in the Study should be contacted directly.

ACKNOWLEDGMENTS

Much of the information in this summary and overview document is summarized from earlier reports, and special thanks are given to the authors of those reports. In particular, Gary J. Coles, Donald H. McLaughlin, and Dorothy Reynolds were responsible for major portions of Volume III that served as the primary source for this report.

We wish to thank the school districts and the ESEA Title VII projects for their cooperation during the conduct of this Study. The list of these school districts and projects is found in the Appendix. All of those listed participated during the 1975-76 school year; most were also involved in the Follow-On Sample during the 1976-77 school year. Without their help, the field data collection efforts could not have been accomplished.

Acknowledgment and thanks are extended to the members of the Study's Bilingual Advisory Panel, Test Advisory Panel, and Design and Analysis Panel for their guidance, suggestions, and contributions. The following is a list of these panels and members with their affiliation during the planning year of the Study.

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We also wish to thank Dr. Ricardo Cornejo of the Center for the Study of Evaluation at the University of California, Los Angeles, for his assistance in examining the Prueba de Lectura for lexical bias.

While we acknowledge the important contributions that have been made by the advisory panels and consultants to this project, the views expressed here and in previous project reports remain the responsibility of the authors and of AIR.

Many individuals have been involved as AIR project staff with the Study since its inception in 1974. We would like to acknowledge the contributions made by Antonio de Porcel, Beatriz Arias, Griselda Castro, Mary Teresa Delgado, Tracy Grey, Osvaldo Grijalva, Ruddi Irizarry, Nancy Locks, Barbera Pletcher, Dorothy Reynolds, and Bonnie Sisson during the selection/development of the student, teacher, parent, and advisory committee questionnaires, the tests administered to students, the educational treatment documentation instruments, and the data collection strategy. Their efforts during the data collection phases, which included training local data coordinators, coordinating test administration, and collecting project documentation, are also appreciated.

The extensive amounts of data collected by the Study involved complicated data management activities. We would like to thank Naomi Bloom and Bruce Everett for their contributions. The analyses of these data for Volume III required many hours of extra effort on the part of Gary Coles, the Study's Manager for Analysis, and David Gross, who carried out the computer runs. The Study is greatly indebted to them. We also wish to thank Donald McLaughlin for his assistance with the analysis of the data and for his preparation of major sections of Volume III. Dorothy Reynolds was a very valuable member of the project team from its inception, and we are indebted to her, especially for her contributions to Volume III. On many occasions, Marion Shaycoft provided guidance as the AIR internal statistical consultant to the Study, and we wish to thank her for her contributions.

Arranging for the myriad of details involved in the logistical operations required in sending out and receiving the many thousands of instruments could not have been accomplished without the efforts of Martha Gregory and her staff, Pamela Carr, Spring Garret, Angelica Hampel, Joan Hansen, Diane Hill, Leonard Lutomski, and Standish Sibley.

The various reports related to the Study's findings were prepared with the assistance of Caroline Dillman, who served as style editor and publications coordinator. She was assisted by Donald Reed and Leonard Lutomski. We appreciate their careful work and attention to the many details involved. The patience and competence of the project administrative assistant, Peggy Young, played a significant role in all aspects of the Study, especially during report preparation.

Finally, we wish to thank all those in the Office of Education who contributed their support and assistance during the conduct of the Study. We are indebted to Mr. Edward Glassman, the Office of Education's technical monitor for the project during the planning year and most of the 1975-76 school year data collection, for his valuable guidance and assistance. We are also indebted to Dr. David Shoemaker, the project's current technical monitor, for his guidance and help during the planning and preparation of Volumes I, II, and III, and this document, and for his assistance in making the arrangements for the 1976-77 school year data collection.

Malcolm N. Danoff
Project Director

I. BACKGROUND AND RATIONALE

A. Program vs. Project Evaluation

The Elementary and Secondary Education Act Title VII Bilingual Education Program was established by Congress in 1968 to meet the special education needs of students of limited English-speaking ability in the United States so that they could eventually achieve competence in the English language. In 1974, to assess the status of the federally funded bilingual education program in the United States, the U.S. Office of Education's Office of Planning, Budgeting, and Evaluation contracted with the American Institutes for Research (AIR) to conduct an "impact" study of this Program. Up to that time, no large-scale national evaluation of the overall effectiveness of the ESEA Title VII Program had been conducted. While data were collected on individual projects, the goal of the Study was evaluating the impact of the Title VII Program as a whole--not evaluating each individual project. The results reported here describe the Program as implemented during the 1975-76 academic year.

B. Goals of the Study

The goals of the Study were to (1) determine both the cognitive and the affective impact of bilingual education on students in Spanish/English bilingual education projects funded through ESEA Title VII, (2) describe the educational processes operating in these projects, (3) identify those educational practices which result in greater gains in student achievement, and (4) determine per-student costs associated with each project.

C. Projects Selected for the Study

Bilingual education projects selected for evaluation were all Title VII Spanish/English bilingual projects in either their fourth or fifth year of funding as of fall 1975. Projects such as these were thought to be reasonably mature projects--ones having refined their approach to bilingual education over time.

II. DATA COLLECTION STRATEGY

A. Study Design

The general design of the Impact Study was one of contrasting the performance of two groups of students: those enrolled in Title VII Spanish/English bilingual projects and comparable students not enrolled in such projects. Students from grades 2 through 6 in each group were pretested and posttested during the 1975-76 school year. A subsample (the Follow-On Sample) of 1975-76 second- and third-grade students was also tested in the fall of the 1976-77 school year. Training, experience, and bilinguality of teachers and teacher aides were determined for both Title VII and Non-Title VII classrooms. In addition, the classroom educational practices in operation in both Title VII and Non-Title VII classrooms were documented thoroughly during the 1975-76 school year for a subsample of all classrooms of students in grades 2 through 6 involved in the Study.

The general design of the Impact Study is illustrated below with the documents associated with each data source indicated.

ANALYSIS SAMPLE	STUDENT TREATMENT AND GRADE										IMPACT STUDY DOCUMENT
	Title VII					Non-Title VII					
	2	3	4	5	6	2	3	4	5	6	
Total Impact Study Sample: Tested Fall 1975 and Spring 1976	X	X	X	X	X	X	X	X	X	X	Volume I Volume III
Intensive Impact Study Sample: Includes all Title VII and comparison sites, but a sample of classrooms and grades were selected for detailed educational treatment documentation during 1975-76 school year	X	X	X	X	X	X	X	X	X	X	Volume II Volume III
Impact Study Follow-On Sample: Sample of 1975-76 school year 2nd and 3rd grades followed into 1976-77 and tested fall 1976		X	X				X	X			Volume III

B. Sample of Projects, Classrooms, and Students

All projects in their fourth or fifth year of federal funding during the 1975-76 school year were evaluated in the Impact Study. From the total pool of Title VII classrooms present in each of the thirty-eight project sites, a stratified random sample was drawn which included at least one classroom for each site from every grade from second through sixth; moreover, to the extent that participating sites would agree to testing, additional classrooms were randomly chosen so that approximately 40% to 50% of the Title VII classrooms in each participating site were tested. In addition, Non-Title VII classrooms were selected for testing in 20 sites which were able to nominate Non-Title VII classrooms within or near their district whose students were comparable to Title VII students in terms of ethnicity, socioeconomic status, and grade level. In all, over 11,500 students in 384 classrooms in 150 schools at 38 different sites across the United States were initially included in the Impact Study Sample.

The numbers of Title VII and Non-Title VII students in each grade present in both fall 1975 and spring 1976 by ethnic group are given in Table 1. For the Follow-On Sample of second- and third-graders followed into their next school year, there were 191 Title VII second-graders, 63 Non-Title VII second-graders, 201 Title VII third-graders and 81 Non-Title VII third-graders.

C. Instruments and Testing Schedule

Instruments were selected or developed to measure student performance in English Oral Comprehension and Reading, Mathematics, and Spanish Oral Comprehension and Reading. In addition, information was collected via a student questionnaire about student background factors (as, for example, ethnicity, socioeconomic status, sex, and age) and student attitude toward school-related activities. To assess teacher and teacher aide qualifications (for example, training, experience, and bilinguality), a teacher/teacher aide questionnaire was developed. To document the educational experiences of a subsample of students in grades 2 through 6, instruments were designed for structuring interviews conducted with personnel at those sites selected and for observing classrooms.

TABLE 1

Numbers of Title VII and Non-Title VII Students by Ethnic Group
Fall 1975 to Spring 1976 Achievement Analysis, Grades 2, 3, 4, 5, and 6

Grade and Ethnic Group	Number of Students Present During Both Fall 1975 and Spring 1976 Data Collection	
Grade 2	Title VII	Non-Title VII
Hispanic	813	321
White, Non-Hispanic	79	92
Black	74	50
Other	90	33
Grade 3	Title VII	Non-Title VII
Hispanic	1031	5[illegible]0
White, Non-Hispanic	132	1[illegible]5
Black	89	61
Other	118	43
Grade 4	Title VII	Non-Title VII
Hispanic	1025	551
White, Non-Hispanic	115	135
Black	85	71
Other	63	35
Grade 5	Title VII	Non-Title VII
Hispanic	827	154
White, Non-Hispanic	73	60
Black	51	42
Other	107	9
Grade 6	Title VII	Non-Title VII
Hispanic	400	76
White, Non-Hispanic	67	46
Black	20	31
Other	52	5

Each student was assigned a testing package containing tests appropriate to his/her level of language competence in English and Spanish as judged by the classroom teacher. All students were tested in the fall and spring of the 1975-76 school year. The Follow-On second- and third-graders were tested additionally in the fall of the 1976-77 school year.

During site visits made by AIR bilingual-bicultural staff during the 1975-76 school year, the Title VII project director and other project staff were interviewed so that project goals and procedures could be documented. In addition, the educational experiences of students in selected classrooms in the subsample of both Title VII and Non-Title VII classrooms were documented through interviews with teachers and classroom observation.

III. DATA ANALYSIS STRATEGY

A. Analytic Approach and Methods

A decade of experience in the evaluation of federal education programs has shown that no single method of statistical analysis can be counted on to permit the evaluator to reach completely valid and uncontestable conclusions. This is because statistical analytic methods are developed to apply to given idealized situations and because the organization and implementation of educational programs are only rough approximations to the idealized situation upon which any one method is based. One solution to this problem is to (1) analyze the data using several kinds of statistical methods, (2) examine empirically (if possible) the degree to which the assumptions underlying each method have been met, (3) look for converging lines of evidence across methods, and (4) limit conclusions to those findings that appear plausible across methods. Thus, three different methods were used to assess, across grades, Program impact on gains in student achievement: (1) standardized residual gain score analysis,[1] (2) analysis of covariance, and (3) comparison of pretest and posttest percentile ranks.

B. Measures of Student Achievement and Attitudes Analyzed

In keeping with guidelines received from the U.S. Office of Education, four areas of student achievement were assessed: English Language Arts, Mathematics, Student Attitudes, and Spanish Language Arts. English Language Arts achievement was assessed by the Comprehensive Tests of Basic Skills (CTBS), a widely used achievement test, and the Prueba de Comprensión Auditiva Inglés (an English as a Second Language [ESL] test). The ESL test measures understanding of spoken rather than written English and was administered only to those students judged by their teachers to be monolingual Spanish for test-taking purposes. Mathematics achievement was assessed by the CTBS. English and Spanish versions of the Mathematics tests were used. Each student took the test in the language more

[1]Kenny, David A. A quasi-experimental approach to assessing treatment effects in the nonequivalent control group design. Psychological Bulletin, 1975, 82(3), 345-362.

appropriate for him or her as judged by the classroom teacher. Three student attitudes were measured by a student questionnaire administered in either English or Spanish: attitude toward English usage, attitude toward Spanish usage, and attitude toward school and school-related activities. Two Spanish Language Arts measures were analyzed: an orally administered Spanish as a Second Language (SSL) test (given to all students except those judged by their teachers to be monolingual Spanish for test-taking purposes) and the Prueba de Lectura, a test of Spanish Reading (given to all students except those judged to be English monolingual for test-taking purposes by their teachers).

IV. SUMMARY OF FINDINGS

A. Types of Students Served by Title VII Projects in the Study

Ethnicity

Approximately 75% of the students enrolled in the Title VII Spanish/English bilingual education classrooms were of Hispanic origin. (Students of Hispanic origin include those who are of Central American, Cuban, Mexican, Puerto Rican, South American, or Spanish [from Spain] descent.)

Age

The age distribution within each grade in the Title VII projects was not unusual. The second-graders were seven to eight years old, third-graders were eight to nine years old, fourth-graders were nine to ten years old, fifth-graders were ten to eleven years old, and sixth-graders were eleven to twelve years old.

Sex

There was an approximately even distribution of boys and girls in each grade in the Title VII projects included in the Study.

Number of Years in a Bilingual Project

Prior to the 1975-76 school year, Hispanic Title VII second-grade students had been in a bilingual project on the average for 2.0 years; third-graders for 2.3 years; fourth-graders for 2.8 years; fifth-graders for 3.1 years; and, sixth-graders for 3.2 years.

Socioeconomic Status

The socioeconomic status of the students participating in the Study was determined by results obtained from a teacher-completed portion of a student questionnaire assessing education and occupation of parents or guardians. Since the questionnaire and derived scores were specifically designed for the Impact Study, comparable data for students not participating in the Study are not available.

Generally, there was little variation in socioeconomic status across grades. The parents of the average Title VII student, across grades, had

a socioeconomic status score on the Study's socioeconomic status scale which could be obtained, for example, if they had received a high school education and were employed at an occupational level roughly equivalent to a service worker or machine operator. With somewhat less education but a slightly higher occupational level job, the parents could be at approximately the same socioeconomic status level in terms of this scale.

Language Skills

Teacher judgment related to student assignment to different test packages. Teachers were asked to assess each of their student's ability to take Reading tests, Mathematics tests, and questionnaires in English and in Spanish. Based on these judgments, students were assigned to one of four language groups for test-taking purposes: (1) English monolingual, (2) English-dominant bilingual, (3) Spanish-dominant bilingual, or (4) Spanish monolingual. This assignment determined the level of difficulty of each test the student took in English Language Arts and Spanish Language Arts. It also was used to determine which version (the English or the Spanish) of the Mathematics test and Student Questionnaire the student would receive. Approximately a third of the second-graders were considered Spanish monolingual by their teachers, with approximately a third being considered English monolingual. Approximately 60% of the second-graders were judged by their teachers to be English monolingual or English-dominant bilingual. For the third-graders, approximately 74% were judged by their teachers to be either English monolingual or English-dominant bilingual (41% were judged to be English monolingual). Approximately three-quarters of the fourth-, fifth-, and sixth-graders in the Title VII classrooms were judged to be either English monolingual or English-dominant bilingual students.

Student assessment related to teacher judgment. Using items from the Student Questionnaire which tapped the student's self-judged proficiency in understanding and speaking English and Spanish and the student's feelings when speaking Spanish and English, a composite score measuring preference for and self-judged proficiency in English vs. Spanish was developed for each student. The relationship between this score and teacher assessment of student language dominance was examined. The two were highly related in that students designated by their teachers as "monolingual Spanish speakers" got low scores on this composite measure

reflecting low preference for English and low self-judged English proficiency, students designated as "monolingual English speakers" obtained high scores on this composite measure, and students identified as "bilingual English/Spanish speakers" scored between the two monolingual groups. The same pattern of differences among means on this composite score occurred at every grade level.

Reason for presence in a Title VII classroom. Generally, less than a third of the students in the Title VII classrooms were there because of their need for English instruction (limited proficiency in English) as judged by the classroom teacher. For students of Hispanic background, 35% in the second-grade Title VII classrooms were there because of their need for English instruction. For grades 3, 4, 5, and 6, the corresponding percentages were, respectively, 30%, 29%, 19%, and 27%.

English Reading scores. Relative to national norms, Title VII Hispanic students, across grades, were performing generally at about the 20th percentile in English Reading.

B. Educational Goals of Title VII Projects in the Study

One of the mandated goals of the Impact Study was determining the educational practices operating in participating Title VII projects. This was done through the use of on-site interviews with project directors and teaching staff and through direct classroom observation.

Project director interview findings. As part of the data collection efforts, each project director was asked, "After the Spanish-dominant child is able to function in school in English, what happens to the child?" Eighty-six percent reported that the student remains in the bilingual project; 8% responded that the student is transferred to an English-only classroom with some Spanish Language follow-up; 5% of the project directors responded that the student is transferred to an English-only classroom with no Spanish language maintenance. These findings reflect Title VII project activities which run counter to the "transition" approach strongly implied by the ESEA Title VII legislation. (Transition in this sense implies that the native language of the student with limited English-speaking ability is used temporarily as a bridge to help the student gain competence in

English. Under this approach, when a student is able to function in a regular English instruction classroom, he or she is transferred out of the bilingual project classroom.) In fact, project goals were more consistent with a maintenance approach to bilingual education. (Maintenance in this sense implies that when a student is able to function in a regular English instruction classroom, he or she remains in the bilingual project to sustain or build competence in the native language and in English.) Project goals often included the objective that the English-monolingual and English-dominant students become fluent in Spanish as well as in English.

Classroom teacher interview findings. In addition to the Title VII project director interviews, Title VII classroom teachers were interviewed and observed. The results of these detailed interviews and observations were consistent with those obtained from the project directors; that is, the Title VII teachers were in fact implementing project activities consistent with the goals as stated by the project directors.

C. Costs Associated with the Title VII Bilingual Project Schools and Non-Title VII Schools for 1975-76

During site visits to each participating site, AIR staff interviewed project staff and school and district administrative personnel to obtain per-pupil costs associated with both Title VII and Non-Title VII students at the site. Funding sources were categorized into (1) ESEA Title VII bilingual funds, (2) bilingual funds from the State and other Non-Title VII federal programs, (3) federal and state funds not associated with bilingual education, and (4) basic district funds.

Per-pupil costs for Title VII students from Title VII funds ranged, depending on region of the country, from $150 to $739 with an average of $310. In addition to these Title VII funds, Title VII students also received additional per-pupil funds from other bilingual funding sources ranging from $18 to $71 with an average of $44. Additional funds coming from other State and federal funding sources not associated with bilingual education for the Title VII schools ranged from $0 to $271, with an average of $174. Non-Title VII schools received additional funds ranging from $0 to $190, with an average of $154.

Considering all of these additional non-district per-pupil funds, the total ranged from $321 to $984 with an average of $531 for the Title VII students. Non-Title VII students received from $0 to $190 for total non-district funds with an average of $154. When these funds are added to the basic district per-pupil funds, the grand total for Title VII students ranged from $1,127 to $[illegible] with an average of $1,398. The grand total for Non-Title VII students ranged from $922 to $1,534 with an average of $1,022. Thus, Title VII students were, on the average, recipients of an additional $376 per student in the Title VII classroom.[2]

D. Characteristics of Teachers and Teacher Aides in Title VII Projects

Overall Qualifications

Eighty-six per cent of the Title VII teachers and 71% of the Title VII aides said that they had been teaching for two years or more; 78% of the Title VII teachers and 8% of the Title VII aides said that they had a regular or a bilingual teaching credential; and 31% of the Title VII teachers and 1% of the Title VII aides reported having a master's degree.

Training and Experience in Bilingual Education

Sixty-five percent of the Title VII teachers and 65% of the Title VII aides said that they had two years or more of bilingual teaching experience. Seventy-four percent of the Title VII teachers and 55% of the Title VII aides said that they had some college course work in bilingual education. Ninety-four percent of the Title VII teachers and 80% of the Title VII aides said that they had attended inservice or district workshops in bilingual/bicultural education in the last five years. Sixty-three percent of the Title VII teachers and 41% of the Title VII aides reported having attended a bilingual/bicultural conference during the last five years.

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[2]The sum of the averages does not equal the average total funds received because not all schools received (and/or reported) funds in all four categories.

Degree of Bilinguality

Sixty-seven percent of the Title VII teachers and 90% of the Title VII aides said that they used both Spanish and English in the home. Sixty-nine percent of the Title VII teachers who had children and 88% of the Title VII aides who had children said that they used both Spanish and English with their children. Sixty-nine percent of the Title VII teachers and 78% of the Title VII aides said that they used both Spanish and English in speaking with their bilingual friends. Fifty percent of the Title VII teachers and 56% of their aides said that they were proficient in both Spanish and English.

E. Impact of Title VII Program on Student Achievement and Attitudes

Results from Second- and Third-Grade Follow-On Sample Fall 1975 to Fall 1976 Analysis

A sample of students in grades 2 and 3 during the 1975-76 school year was tested again in the fall of 1976. Those students followed into the 1976-77 school year appeared to be different from those not selected for this third testing with respect to geographic distribution, proportion of students within the Hispanic ethnic group who were Mexican-American and Puerto Rican, socioeconomic status, and reason for being in the Title VII Program. (In comparison with the students not followed, the Follow-On Sample (1) was less balanced geographically across the United States, (2) contained proportionately more students of Puerto Rican heritage than Mexican-American within the Hispanic ethnic group, (3) had fewer Title VII students judged by their teachers during the 1975-76 school year to be in the Title VII Program because of their need for English instruction, and (4) contained Title VII students who were of higher socioeconomic status.)

The fall-to-fall achievement gains in English Reading and in Mathematics Computation in Title VII projects were neither significantly nor substantially different from what would have been expected without participation in a Title VII project.

A second result is that the English Reading percentile rank of the average Title VII Hispanic student remained at approximately the same level between fall 1975 and fall 1976 (approximately 20th percentile) for the second- and third-graders who were followed into the third and fourth grades. In general, the status of the Title VII Follow-On students in

Mathematics Computation also remained quite constant from fall 1975 to fall 1976 (approximately 30th percentile for the second-graders and 40th percentile for the fourth-graders).

Results from Second Through Sixth Grade Full Impact Study Sample Fall 1975 to Spring 1976 Analysis

English Language Arts and Mathematics. In general, the results of the three methods of Title VII impact analysis (standardized residual gain score analysis, analysis of covariance, and comparison of pretest and posttest percentile ranks) were supportive of each other. While there were some instances of Title VII impact in English Language Arts or Mathematics in some grades, the overall across-grade Title VII student analyses showed that the Title VII Program did not appear to be having a consistent significant impact on student achievement in these two subjects.

In general, across grades, when total Title VII and Non-Title VII comparisons were made, the Title VII students in the Study were performing in English worse than the Non-Title VII students. In Mathematics, across grades, they were performing at about the same level as Non-Title VII students.

Relative to national norms, Title VII Hispanic students, across grades, were performing at about the 20th percentile in English Reading and at about the 30th percentile in Mathematics.

Student attitudes. Participation in the Title VII program did not bring about a more positive student attitude toward school and school-related activities. In general, the students appeared to have a fairly neutral attitude (neither strongly positive nor strongly negative) toward school in both Title VII projects and Non-Title VII schools.

Spanish Reading. While no appropriate test norms or comparison groups were available to assess the relative impact of Title VII on the acquisition of Spanish Reading, there was an increase in the scores on the Spanish Reading test (Prueba de Lectura) between the pretest and posttest in the 1975-76 school year for Title VII students.[3]

[3] Comparative analyses of the gains were not feasible because (1) the number of Non-Title VII comparison students completing the Prueba de Lectura was exceedingly small and (2) no appropriate normative information was available for the particular test score used in these analyses (a total raw score based upon only those items judged to be lexically appropriate for students of various Hispanic backgrounds).

F. Relationship Between (1) Gains in Student Achievement and Attitudes and (2) Classroom Procedures, Classroom Environment, and Teaching Staff Characteristics

Classroom Procedures

Detailed descriptions of instructional practices in the classrooms were obtained through interviews with teachers and classroom observations for a subsample of the participating Title VII and Non-Title VII classrooms during the 1975-76 school year. Within the set of Title VII classrooms participating in the Impact Study, half were selected for this intensive analysis. In all, 161 classrooms were selected for intensive analysis, 120 of which were Title VII and 41 of which were Non-Title VII classrooms. All Title VII projects in the Study were represented in this intensive analysis subsample. Since the objective of these process analyses was to assess the effects of various instructional strategies and to discover the more effective strategies for the kinds of students included in the Impact Study Sample, the instructional practices in the classrooms of all the Intensive Sample students (Title VII and Non-Title VII) were included. These process analyses should not be viewed as an evaluation of all bilingual education processes, since the sample of classrooms participating in the Intensive Sample and in the Impact Study Sample were not chosen to be representative of the universe of all classrooms implementing bilingual education practices but were by mandate of the Study restricted to Title VII Spanish/English bilingual projects and the comparison schools in the Study. However, because of the wide variety of instructional processes present in participating Title VII and Non-Title VII classrooms, it seems reasonable to assume that these analyses are fairly comprehensive and that they do represent findings that might be generalizable to students such as those involved in the educational processes analyzed. The classroom level educational process variables examined are shown in Table 2.

English Language Arts Educational Processes. While no consistent results were found across the grades (2 through 6) in the Study for any of the process variables and test scores and student attitudes examined, for three of the grades the Extent of Grouping (to form smaller subgroups of students within the class for instructional purposes) was significantly

TABLE 2

Classroom Level Educational Process Variables

Average Teacher Hours per Student per Week
Average Adult Hours per Student per Week
English as a Second Language Is Taught
Spanish Language Arts Is Taught
Spanish as a Second Language Is Taught
Whole-Class Instruction in English as a Percentage of Total English Instructional Time
Individualized Instruction in English as a Percentage of Total English Instructional Time
Group Instruction in English as a Percentage of Total English Instructional Time
Average English Hours per Student per Week
Grouping Index for English
English as a Second Language as a Percentage of Total English Time
Spanish Use Allowed in English Classes
Whole-Class Instruction in Spanish as a Percentage of Total Spanish Instructional Time
Individualized Instruction in Spanish as a Percentage of Total Spanish Instructional Time
Group Instruction in Spanish as a Percentage of Total Spanish Instruction Time

(continued)

TABLE 2 (continued)

Classroom Level Educational Process Variables

Average Spanish Hours per Student per Week
Grouping Index for Spanish
Spanish as a Second Language as a Percentage of Total Spanish Time
English Use Allowed in Spanish Classes
Whole-Class Instruction in Mathematics as a Percentage of Total Mathematics Instructional Time
Individualized Instruction in Mathematics as a Percentage of Total Mathematics Instructional Time
Group Instruction in Mathematics as a Percentage of Total Mathematics Instructional Time
Average Mathematics Hours per Student per Week
Grouping Index for Mathematics
Spanish Use Allowed in Mathematics Class

and positively related to gains in one or more of the tests used to assess English proficiency. That is, the greater the grouping and regrouping of students, the greater the gains in student achievement.

Mathematics Educational Processes. While no consistent results were found across all grades in the Study, it does appear that the more whole-class instruction there is, the less the Mathematics gains; and the more grouping or individualized instruction, the greater the gains. This was the same finding as for the English Language Arts Educational Process Analysis.

The extent of Spanish Use Permitted in Mathematics Class was found generally to be unrelated to student gains in Mathematics. That is, the teacher use of Spanish or the student use of Spanish during the Mathematics instruction does not appear to produce gains in Mathematics.

Spanish Language Arts Educational Processes. There was a consistent positive relationship between Extent of Grouping and gains in the Spanish as a Second Language test scores. That is, the greater the grouping and regrouping of students, the greater the gains in student achievement.

The average number of Hours per Student per Week in Spanish Language instruction was positively related to gains in the Spanish as a Second Language scores. However, there were no significant relationships in any grade between hours spent per week in Spanish Language instruction and the Spanish Reading test score gains.

Classroom Environment

There was no consistent relationship found across grades between any of the gains in student achievement or attitudes and the variable, Proportion of Hispanic Students in the Classroom. That is, as the number of Hispanic students in a classroom relative to the number of non-Hispanic students increased or decreased, there was no corresponding change in gains in any of the student outcome measures in English Language Arts, Mathematics, Student Attitude Toward School, or Spanish Language Arts for students in that classroom. The degree to which English is used in the home and neighborhood (as measured by the Parent Questionnaire) was also found to have no consistent relationship with gains in any of the student test scores in English, Spanish, or Mathematics or attitudes across grades.

Teaching Staff Characteristics

The relationships between almost all the characteristics of teachers and teacher aides assessed by the Study and gains in student outcome measures did not extend across more than one or two grades; and at times, a given characteristic was positively related with an outcome for one grade and negatively related with the same outcome measure for another grade. It thus appears that teacher and teacher aide overall teaching qualifications (highest college degree, type of state teaching credential, and years of full-time teaching experience), bilingual teaching qualifications (years of teaching in a bilingual program, college training in bilingual education, and attendance at conferences on bilingual education), and bilinguality (language proficiency presently and as a teenager and as a child; language usage at home, with own children, and with bilingual friends) have little relationship to student gains in English Reading, English as a Second Language, Mathematics, and Spanish Reading; or to a more positive attitude on the part of students toward school and school-related activities, attitude toward English usage, or attitude toward Spanish usage.

APPENDIX

Title VII Projects and School Districts
Participating in the Impact Study

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Title VII Projects and School Districts Participating in the Impact Study

Douglas Bilingual-Bicultural Program
Douglas Public Schools, Arizona

Bay Area Bilingual Education League (BABEL)
Berkeley Unified School District, California

Bay Area Bilingual Education League (BABEL)
Jefferson Elementary School District, California

Bay Area Bilingual Education League (BABEL)
Oakland Unified School District, California

Bay Area Bilingual Education League (BABEL)
Richmond Unified School District, California

Bilingual-Multicultural Education Program
Hayward Unified School District, California

Bilingual Multicultural Education Project
Pajaro Valley Unified School District, California

Comprehensive Bilingual Education Program
New Haven Unified School District, California

Upper Valley Intercultural Program
Dixon and West Placer Unified School Districts, California

Bilingual Foundation for School Success
Bridgeport Board of Education, Connecticut

Project EXITO
Hartford Board of Education, Connecticut

Jackson-McLaren Elementary Bilingual-Bicultural Center
Kosciusko Bilingual Program
Chicago Board of Education, Illinois

New Orleans Bilingual Bicultural Education Program
New Orleans Public Schools, Louisiana

Bilingual-Bicultural Education Program
Chelsea Public Schools, Massachusetts

Bilingual-Bicultural Program for Spanish/English Speaking Students
Grand Rapids Public Schools, Michigan

Detroit's Comprehensive Bilingual-Bicultural Education Program
School District of Detroit, Michigan

Project Better Communication
New Brunswick Board of Education, New Jersey

Taos Bilingual-Bicultural Program
Taos Municipal Schools, New Mexico

Bilingual-Bicultural Program
Consolidated School District #24, New York

Bilingual Education Department
Beacon Enlarged School District, New York

Bilingual Education Program
Buffalo Public Schools, New York

Bilingual Focus for the Seventies
Consolidated School District #6, New York

Bilingual Mini-School 59
Consolidated School District #10, New York

Bilingual School Complex
Consolidated School District #8, New York

District Three Bilingual Program
Consolidated School District #3, New York

North Rockland Bilingual Program, Project Advance
North Rockland Central School District, New York

Title VII Bilingual Program - Bilingual Community School
Consolidated School District #12, New York

Amistad Bilingual Education Program
Southside Independent School District, Texas

Bilingual-Bicultural Education Program
Crystal City Independent School District, Texas

Bilingual Education Program: To Be Bilingual Is To Be Bicultural
Brownsville Consolidated Independent School District, Texas

Bilingual-Multicultural Education Program
Dallas Independent School District, Texas

Bishop Bilingual Program
Bishop Consolidated School District, Texas

Developing Bilingual Citizens
Rio Grande Consolidated Independent School District, Texas

Eagle Pass Elementary Bilingual Education Program
Eagle Pass Independent School District, Texas

Podemos Ser Juntos Amigos
Pharr-San Juan-Alamo Independent School District, Texas

Project ABLE
Abilene Independent School District, Texas

Robstown Bilingual Education Program
Robstown Independent School District, Texas